

What is claimed is:

1. A semiconductor light emitting device comprising a light emission layer, consisting of a GaN system semiconductor, which is interposed between an n type GaN system semiconductor layer and a p type GaN system semiconductor layer, wherein there is provided a Ga-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film.

2. The semiconductor light emitting device according to claim 1, characterized in that associated with a quantity of doped Ga, with which the  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film is doped, wherein a carrier concentration is  $1 \times 10^{19} \text{cm}^{-3}$  or more and  $5 \times 10^{21} \text{cm}^{-3}$  or less.

3. The semiconductor light emitting device according to claim 1, characterized in that there is provided a metal electrode, which supplies an electric current to either the n type GaN system semiconductor layer or the p type GaN system semiconductor layer, and that said Ga-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film is formed between the n type GaN system semiconductor layer or the p type GaN system semiconductor layer, and the metal electrode.

4. The semiconductor light emitting device according to claim

3, characterized in that associated with a quantity of the doped Ga, with which the  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film is doped, wherein a carrier concentration is  $1 \times 10^{19} \text{cm}^{-3}$  or more and less than  $5 \times 10^{21} \text{cm}^{-3}$ .

5. The semiconductor light emitting device according to claim 1, characterized in that there is provided a metal electrode, which supplies an electric current to either the n type GaN system semiconductor layer or the p type GaN system semiconductor layer, and that the metal electrode and the Ga-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film adjoin each other; and the metal electrode and the Ga-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film are arranged so as to be contiguous to the face of the n type GaN system semiconductor layer or the p type GaN system semiconductor layer and the metal electrode.

6. The semiconductor light emitting device according to claim 5, characterized in that associated with a quantity of the doped Ga, with which the  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode is doped, wherein a carrier concentration is  $1 \times 10^{19} \text{cm}^{-3}$  or more and less than  $5 \times 10^{21} \text{cm}^{-3}$ .

7. A semiconductor light emitting device comprising a light emission layer, consisting of a GaN system semiconductor, which is interposed between a n type GaN system semiconductor

layer and a p type GaN system semiconductor layer, wherein there is provided a B-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film.

8. The semiconductor light emitting device according to claim 7, characterized in that associated with a quantity of the doped B, with which the  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode is doped, wherein a carrier concentration is  $1 \times 10^{19} \text{cm}^{-3}$  or more and less than  $5 \times 10^{21} \text{cm}^{-3}$ .

9. The semiconductor light emitting device according to claim 7, characterized in that there is provided a metal electrode, which supplies an electric current to either the n type GaN system semiconductor layer or the p type GaN system semiconductor layer, wherein said B-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film is formed between the n type GaN system semiconductor layer or the p type GaN system semiconductor layer, and the metal electrode.

10. The semiconductor light emitting device according to claim 9, characterized in that associated with a quantity of the doped B, with which the  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode is doped, wherein a carrier concentration is  $1 \times 10^{19} \text{cm}^{-3}$  or more and less than  $5 \times 10^{21} \text{cm}^{-3}$ .

11. The semiconductor light emitting device according to

claim 7, characterized in that there is provided a metal electrode, which supplies an electric current to either the n type GaN system semiconductor layer or the p type GaN system semiconductor layer, wherein the metal electrode and the B-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film adjoin each other and the metal electrode and the B-doped  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode film are arranged so as to be contiguous to the face of the n type GaN system semiconductor layer or the p type GaN system semiconductor layer and the metal electrode.

12. The semiconductor light emitting device according to claim 11, characterized in that associated with a quantity of the doped B, with which the  $\text{Mg}_z\text{Zn}_{1-z}\text{O}$  ( $0 \leq z < 1$ ) electrode is doped, wherein a carrier concentration is  $1 \times 10^{19} \text{cm}^{-3}$  or more and less than  $5 \times 10^{21} \text{cm}^{-3}$ .